EXHIBIT B

TO RULE 4.2 STATEMENT OF DR. DOUGHERTY

JOSEPH P. DOUGHERTY

PRESENT POSITION

The Pennsylvania State University, University Park, PA: 1988-2008; Associate Professor Emeritus of Electrical Engineering and Materials, and Senior Research Associate, Materials Research Institute, Research Faculty at Penn State Electro-Optics Center. Former Director (1988-97) of the Center for Dielectric Studies (an NSF Industry/University Cooperative Research Center)

PREVIOUS POSITIONS

Advanced Materials Technologies: 1983-2008; President, AMT is a consulting firm, founded in 1983, which specializes in technical marketing and R&D for new components, multilayer capacitors, multilayer actuators, sensors, and transducers utilizing electronic ceramic materials.

Gulton Industries: 1981-1983; Director of Engineering/Electronic Products--Electro-Voice Division of Gulton Industries, Inc., Buchanan, Michigan. Responsible for research, design and development of new audio signal processing products.

Gulton Industries: 1979-1981; Director of Engineering--Piezo Products Division, Gulton Industries, Inc., Metuchen, New Jersey. Directed technical staff in new product research, including multilayer devices, manufacturing & quality improvements, ceramic processing, and materials development for piezoelectric transducers.

Philips Laboratories: 1977-1979; Project Leader--Philips Laboratories, North American Philips, Briarcliff Manor, New York. Developed world's first computer controlled dielectric test facilities used in the electrical characterization of piezoelectric, pyroelectric, and dielectric materials and devices. Appointed U.S. Representative on N.V. Philips liaison committee responsible for recommendations on analytical procedures and capital acquisitions for materials analysis.

N.V. Philips Central Research Lab: 1976-1977; Project Leader--N.V. Philips Central Research Lab, Eindhoven, The Netherlands. Coordinated international research team in the development of high electric field electroceramic materials with tailored dielectric nonlinearities. Developed a new multilayer capacitor for application in fluorescent lamp ballast circuits. Developed prototype capacitors for high efficiency fluorescent lighting circuits.

Philips Laboratories: 1973-1976; Materials Research Scientist--Philips Laboratories, North American Philips, Briarcliff Manor, New York. Investigated fundamental electrical and optical properties of materials for use in modulators, information storage devices, and pyroelectric detectors. Developed a new laser instrument, The Second Harmonic Analyzer, for the measurement of basic crystalline properties.

EDUCATION

Villanova University, B.E.E.

Penn State University, M.S.E.E.
Dissertation: "Guided Microwave Mode Conversion in a Magnetized Plasma"

Penn State University, Ph.D. in Electrical Engineering, 1972
Dissertation: "Electrical Conduction and Optical Properties of Ferroelectric Crystals"

Professional Activity

- Invited Speaker at 3rd Workshop on Terahertz Technology; “Terahertz Imaging of Burned Tissue: Capabilities, Possibilities and Challenges” Kaiserslautern, Germany, March 2008
- Invited Speaker at FACSS Oct 14, 2007, (Society for Applied Spectroscopy); “Terahertz and mm-wave Imaging: Transmission and Reflection Capabilities and Needs
- SPIE Photonics West, 22 January 2007, “Terahertz Imaging of Burned Tissue”
- Co-Chair of the National Electronic Manufacturing Initiative (NEMI) 2000, 2002, 2004 & 2006 Roadmaps for Passive Electronic Components Technology Group
- Co-Author of NEMI 2000, 2002, 2004 & 2006 Roadmaps for Passive Electronic Components
- Twelfth Symposium on Polymers for Microelectronics, May 3, 2006, Winterthur, Wilmington, Delaware; “Terahertz and Millimeter Wave Properties of Dielectrics for Electronic Applications”
- **Keynote Speaker at CARTS 2003**, Capacitor and Resistor Technology Symposium – Scottsdale, Arizona
- E. Breval, M. Klimkiewicz, C-P Wang, A. Crespi and J. Dougherty, "Sinterability and Decomposition of $Pb_{0.9175} La_{0.055} Zr_{0.975} Ti_{0.025} O_3$. Influence of Calcination and Sintering Temperature", J. Am. Ceramic Soc. 90 (7) 2043-2049 (2007)
- E. Breval, M. Klimkiewicz, C-P Wang, A. Crespi, and J. Dougherty, " Annealing of Sintered $Pb_{0.9175} La_{0.055} Zr_{0.975} Ti_{0.025}$ in Air". J. Am. Ceramic Soc., 90 (8) 2664-2666 (2007)
- PLZT Phases Near Lead Zirconate: 2. Determination by Electrical Properties, J. Am. Cer. Soc, 90, 2007
- PLZT Phases Near Lead Zirconate: 1. Determination by X-Ray Diffraction, J. Am. Ceramic Soc. 88, 437-442, 2005
- “Dielectric Characterization of Dielectric Ceramic Materials using Terahertz Time-Domain Spectroscopy” K. Rajab, S. Perini, J. Dougherty, M. Iwasaki, M. Lanagan, IMAPS 2006, Denver, CO
- MSS February 2007, Orlando, FL, (Military Sensing Symposium); “Terahertz and MM-Wave Optical Properties and Imaging Through Wet and Dry Textiles”
- MSS February 2007, Orlando, FL, (Military Sensing Symposium); “Terahertz and MM-Wave Imaging Simulations”
- MSS February 2005, Charleston, SC, (Military Sensing Symposium); “Process and Materials Effects on Time Dependent Microbolometer Resistance Changes”
- MSS March 2004, Tucson, Arizona, (Military Sensing Symposium) “Time Dependent Microbolometer Resistance Changes”
- Member IEEE Ferroelectrics Standards Committee
- Invited Participant at the DARPA/Special Operations Command Sponsored First “Scientists Helping America “ Workshop at the Naval Research Labs, Washington DC
- Member of an NSF Review Panel for SBIR programs on Nanoparticle Materials and Electronic Devices
- Symposium Organizer for American Ceramic Society (ACERS) 2002 Annual Meeting
- Session Organizer for IMAPS Keystone Meeting June 2002

- Member of an NSF Review Panel for SBIR programs on Carbon Nanotubes and Electronic Materials
- Directed a program that developed a family of antiferroelectric materials for use in high energy density multilayer ceramic capacitors for use in implantable cardioverter defibrillators made by Medtronic Corp.
- Was awarded 3 US Patents for the antiferroelectric materials for high energy multilayer capacitors.
- "Cardiac Defibrillator with High Energy Storage Antiferroelectric Capacitor", J.P. Dougherty, No. 5,545,184
- "Cardiac Defibrillator with Multi-Phase Ferroelectric/Antiferroelectric Capacitor", J.P. Dougherty et. al., No. 5,728,138
- "Method for Reduction of Sintering temperatures of Antiferroelectric, Lead-Based Ceramics by Use of Lithium Compound Additions and Capacitors Made with Such Ceramics" US Patent # 5,993,895 Issued November 30, 1999.
- J.P. Dougherty, E. Breval, and M. J. Klimkiewicz "Magnetically Aligned Anisotropic Composite Films". American Ceramic Society, 103rd. Annual Meeting and Exposition. April 22-25, Indianapolis, Indiana.
- J.P. Dougherty, E. Breval, M. J. Klimkiewicz, and James D. Weigner, "The formation of PLZT from Oxides During Calcination". 10th US-Japan Seminar on Dielectric and Piezoelectric Ceramics, Sep 27-29, 2001.
- "Capacitive Energy Storage in PLZT Ceramics", Joseph Dougherty, Else Breval, Chiping Wang, Ann Crespi, Frank Duva, Mike Stewart, Presented at CARTS, March 26-28, 2002, New Orleans, Louisiana.
- "High Energy Density Capacitors Utilizing Electric Field Induced Phase Transitions in PLZT Ceramics", Joseph P. Dougherty, Else Breval, Chiping Wang, Ann Crespi, Frank Duva, Mike Stewart, ACerS 2002 Annual Meeting, April 28-May 1, 2002, St. Louis, MO.
- Invited Participant at the 10th US-Japan Seminar on Dielectric and Piezoelectric Ceramics, Sep 27-29, 2001.
- National Electronic Manufacturing Initiative (NEMI) 2002 Roadmap: Co-Chair of the Passive Electronic Components Technology Group.
- Member Stevens Institute of Technology, Science, Business and Technology Advisory Board (2001).
- "Solution Coated Hydrothermal BaTiO3 for Low-Temperature Firing US Patent # 6,169,049" J.P. Witham, C. A. Randall, U. Kumar, U. Selvaraj, S. Wang, J. P. Dougherty.
- "Method For Producing Anisotropic Dielectric Layer And Devices Including Same" US Patent # 6,376,393 B1; Mike Newton, Joseph P. Dougherty, Else Breval, Maria Klimkiewicz, Yi Ton Shi, Dean Arakaki.
- Chair of the Orton Memorial Lecture Committee (2000) for the American Ceramic Society
- Invited Speaker at the NEMI 2000 Roadmap Symposium – Washington DC
- Invited Speaker at NIST Workshop on Embedded Decoupling Capacitors – Gaithersburg, MD
- Invited Speaker at APEX 2000 Electronics Manufacturing Symposium – San Diego , CA
- Member of an NSF Review Panel for SBIR programs on electronic materials

- Invited Speaker at the Millennium European Microelectronics Conference – Strasbourg, France
- Member IEEE Ferroelectrics Standards Committee
- Invited Speaker at the Passive Components Trends and New Technology Symposium for CARTS 2000
- Member of the American Ceramic Society Meeting Improvement Taskforce 2000
- American Ceramic Society :,Chair, Electronics Division 2000, and Program Chair, for the Electronics Division at the Annual Meeting, Cincinnatti, Ohio, May 1998
- Co-Chair, Technology Working Group on Passive Components, NEMI, The National Electronics Manufacturing Initiative Roadmap, 1997-98, 1998-99
- Invited Short Course Instructor, "Materials for Manufacturing Integrated Passive Components ", Capacitor and Resistor Technology Symposium, (CARTS), Huntington Beach, CA, March 1998
- Invited Speaker, "Electrical Measurements of Embedded Capacitors", , National Consortium for Manufacturing Science Workshop at Santa Clara, CA, Feb. 12-13, 1998
- Invited Speaker, "Materials Alternatives for Integrated Passive Components", Distributed Embedded Capacitance Workshop, National Consortium for Manufacturing Science at StorageTek, Louisville Colorado, Nov 14-15, 1997
- External Peer Reviewer for the NASA Program on Smart Materials, NASA Langley Research Center, Hampton VA, October 28-30, 1997
- Technical Program Co-Chair, International Microelectronics and Packaging Society (IMAPS, formerly ISHM), , International Symposium on Microelectronics, Philadelphia, PA, October 13-16,1997
- Invited Review Panel, National Science Foundation SBIR Program for Microelectronic Devices and Materials, National Science Foundation, Arlington, VA, September 15-16,1997
- Invited Speaker, "Materials for Integrated Components", Electronics Industry Association, Hilton Head, SC, June 23-24, 1997
- Invited Short Course Instructor, "Emerging Materials for Micromachined Sensors and Transducers", Ninth International Conference on Solid-State Sensors and Actuators, June 16-19, 1997
- Raghu Natarajan and Joseph P. Dougherty, "Material Compatibility and Dielectric Properties of Co-Fired High and Low Dielectric Constant Ceramic Packages" Proc. Electronic Components & Technology Conference (ECTC), San Jose, CA, May 18-21, 1997

PROFESSIONAL AFFILIATIONS

Fellow - American Ceramic Society (ACerS)
- Chair-Elect, Electronics Division , ACerS
- Member, Electronics Division Steering Committee
- Member, Society Legislative & Regulatory Committee
- Member, Society Government Liason Committee

Member Institute for Electrical and Electronics Engineers (IEEE)
- IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society
- IEEE Components, Hybrids, and Manufacturing Technology Society
- Member, IEEE Committee on Ferroelectrics
- Co-author of IEEE Standard on Ferroelectric Definitions

Member International Microelectronics & Packaging Society (IMAPS/ISHM)
- Program Co-Chair for 1997 International Symposium

U.S. Chairman for 5th US:Japan Seminar on Dielectric and Piezoelectric Ceramics

HONORS AND AWARDS

Fellow - American Ceramic Society
"Honored Member" of Strathmore's Who's Who Registry 1998-1999
Eta Kappa Nu

PATENTS

"A Method of Recording and Reproducing Information in Ferroelastic Metals," J.P. Dougherty, A.L. Dalisa, R.J. Seymour, No. 3,866,187.

"A Second Harmonic Analyzer," J.P. Dougherty, S.K. Kurtz, R.J. Seymour, No. 3,941,478.

"Piezoelectric Fluid Pumping Apparatus," D.N. AbuJudom, J.P. Dougherty, K.M. Stengel, No. 4,708,600.

"Metallization Compositions for Bi and Pb-Containing Ceramic Dielectrics" , J.P. Dougherty, S.F. Wang, and W. Huebner, No. 5,391,223

"Cardiac Defibrillator with High Energy Storage Antiferroelectric Capacitor", J.P. Dougherty, No. 5,545,184

"Cardiac Defibrillator with Multi-Phase Ferroelectric/Antiferroelectric Capacitor", J.P. Dougherty et. al., No. 5,728,138

"Method for Reduction of Sintering temperatures of Antiferroelectric, Lead-Based Ceramics by Use of Lithium Compound Additions and Capacitors Made with Such Ceramics" US Patent # 5,993,895 Issued November 30, 1999

"Solution Coated Hydrothermal BaTiO3 for Low-Temperature Firing US Patent # 6,169,049" J.P. Witham, C. A. Randall, U. Kumar, U. Selvaraj, S. Wang, J. P. Dougherty, Issued January 2, 2001

"Method For Producing Anisotropic Dielectric Layer And Devices Including Same" US Patent # 6,376,393 B1; Mike Newton, Joseph P. Dougherty, Else Breval, Maria Klimkiewicz, Yi Ton Shi, Dean Arakaki, Issued April 23, 2002

PUBLICATIONS

Books or Parts of Books

S.K. Kurtz and J.P. Dougherty, "Methods for the Detection of Noncentrosymmetry in Solids, "Systematic Materials Analysis, Vol. IV, Academic Press, Inc., NY (1978), Chapter 38, pp.269-342.

IEEE Standard Definitions of Primary Ferroelectric Terms, ANSI/IEEE Std 180-1986, IEEE Press, NY (1986), 21 pp. Co-author, Major Contributor.

Proceedings of the Center for Dielectric Studies Symposium on the Improvement of Multilayer Capacitor Reliability, University Park, PA (May 1989) 257 pages, Co-Editor of Proceedings

Conference Proceedings from the Fifth U.S.-Japan Seminar on Dielectric and Piezoelectric Ceramics, Kyoto, Japan (Dec 1990) 372 pages, Co-Editor of Proceedings and General Chairman of Conference.

Proceedings of the Center for Dielectric Studies Symposium on the Improvement of Multilayer Ceramic Reliability, University Park, PA (May 1991) 241 pages, Co-Editor of Proceedings and Symposium Co-Chairman

Multilayer Ceramic Packaging Patent Front Pages, State College, PA (March 1993) 614 pages, Joseph P. Dougherty and Solomon Levinson, co-authors.

The Era of Materials, Clive A. Randall and Joseph P. Dougherty, "Integrated Ceramic Packaging", to be published by The Pennsylvania Academy of Science

Articles Published

J.P. Dougherty, E. Sawaguchi, and L.E. Cross, "Ferroelectric Optical Rotation Domains in Single-Crystal $Pb_5Ge_3O_{11}$," Applied Physics Lett., 20: 364-365 (1972).

G. Joy, A.P. Gaughan, Jr., I. Wharf, D.F. Shriver, and J.P. Dougherty, "Single-Crystal Raman Evidence for and X-ray Analysis of the Distorted Square Pyramidal Pentachlorothallate and Pentachloroindate Complexes in $[(C_2H_5)_4N]_2$ $[TlCl_5]$ and $[(C_2H_5)_4N]_2[InCl_5]$," Inorganic Chemistry, 14(8): 1795-1799 (1975).

J.L. Kirk, J.P. Dougherty, and L.E. Cross, "Pressure and Temperature Dependence of the Dielectric Properties and Phase Transitions of the Ferroelectric $Pb_5Ge_3O_{11}$," Ferroelectrics, 11: 439-443 (1976).

W.K. Zwicker, J.P. Dougherty, M. Delfino, and J. Ladell, "Growth of High Quality Lead Germanate Crystals for Pyroelectric Applications," Ferroelectrics, 10: 347-350 (1976).

J.P. Dougherty and S.K. Kurtz, "A Second Harmonic Analyzer for the Detection of Non-Centro Symmetry," Journal Applied Crystallography, 9: 145-158 (1976).

M. Delfino, J.P. Dougherty, W.K. Zwicker, and M.M. Choy, "Solution Growth and Characterization of L(+) Glutamic Acid Hydrochloride Single Crystals," Journal of Crystal Growth, 36(2): 267-272 (1976).

W.K. Zwicker, M. Delfino, J.P. Dougherty, and A. Sicignano, "Formation of Secondary Phases During Crystal Growth of $Pb_5Ge_3O_{11}$," Journal of Electronic Material, 6(2): 125-143 (1977).

J.P. Dougherty, "Knock Sensors," Proceedings of the Eighth Annual Automotive Materials Conference, American Ceramic Society, Columbus, OH (Nov. 1979).

J.P. Dougherty and R.J. Seymour, "Automated, Simultaneous Measurement of Electrical Properties of Pyroelectric Material," Review Scientific Instruments, 51(2): 229-233 (Feb. 1980).

J.P. Dougherty and M.E. Rosar, "A Semiautomatic Microstructural Analysis System," American Ceramic Society Bulletin, 59(8): 852-853 (Aug. 1980).

R.J. Seymour, J.P. Dougherty, and A. Shaulov, "Investigation of the Relationship Between the Spontaneous Polarization and Permittivity in TGS and DTGFB," Ferroelectrics, 20: 163-166 (Sept. 1980).

A.S. Bhalla, R.E. Newnham, L.E. Cross, J.P. Dougherty, and W.A. Smith, "Pyroelectricity in SbSI," Ferroelectrics, 33: 3-7 (1981).

J.P. Dougherty and R. Allen, "Piezoceramics Meet Stringent Specifications," Ceramics Industry, Cahners Publishing Co., Pittsburgh, PA 4pp. (May 1981).

A.S. Bhalla, L.E. Cross, J.P. Dougherty, R.E. Newnham, W.A. Schulze, and W.A. Smith, "Pyroelectric PZT-Polymer Composites," Ferroelectrics, 33: 139-146 (1981).

J.P. Dougherty, "Emerging Applications of Piezoelectric Sensors and Transducers," The Second U.S./Japan Seminar on Dielectric and Piezoelectric Ceramics, pp. 157-171, Office of Naval Research, Arlington, VA (Nov 1984).

J.P. Dougherty, "Operationally Induced Thermal Stress Gradients in Multilayer Capacitors," Conference Proceedings from Third U.S./Japan Seminar on Dielectric and Piezoelectric Ceramics, pp. 29-30, Office of Naval Research, Arlington, Va (Nov 1986).

D. AbuJudom and J.P. Dougherty, "Piezoelectrically Driven Diaphragm Air Pumps," Proceedings of the Fourteenth Annual Automotive Materials Conference, American Ceramic Society, Columbus, OH (Nov 1986).

J.P. Dougherty, S.A. Costantino, and M. Megherhi, "Modified Lead Magnesium Niobate for Use in Integrated Ceramics," Conference Proceedings from Fourth U.S./Japan Seminar on Dielectric and Piezoelectric Ceramics, pp. 333-348, National Bureau of Standards, Gaithersburg, MD (Nov 1988).

P. Papet, J.P. Dougherty, and T.R. Shrout "Particle and grain size effects on the dielectric behavior of the relaxor ferroelectric lead magnesium niobate," J. Mater. Res., 5: 2902-2909 (1990).

T.R. Shrout and J.P. Dougherty, "Lead Based $Pb(B_1B_2)O_3$ Relaxors vs $BaTiO_3$ Dielectrics for Multilayer Capacitors," Ceramic Transactions, Ceramic Dielectrics: Composition, Processing, and Properties, American Ceramic Society, Columbus, OH, 8: 3-19 (1990).

S. F. Wang,W. Huebner, and J.P. Dougherty, "Oxidation and reduction of Pd in the presence of Ag," Conference Proceedings from the Fifth U.S.-Japan Seminar on Dielectric and Piezoelectric Ceramics, Kyoto, Japan (Dec 1990).

D.Roy, S.B. Krupanidhi, and J.P. Dougherty,"Eximer laser ablated lead zirconate titanate thin films," J. Appl. Phys., 69: 7930-7932 (1991).

T.R.Shrout, J.P. Dougherty, T.I. Prokopowitz, and G. Maher, "Hot isostatic pressing of multilayer ceramic capacitors," Proceedings of the Center for Dielectric Studies Symposium on Improvement of Multilayer Ceramic Reliability, University Park, PA. (May 1991)

R. Bacsa, P. Ravindranathan, and J.P. Dougherty, "Electrochemical, Hydrothermal, and Electrochemical-Hydrothermal Synthesis of Barium Titanate Thin Films on Titanium Substrates," J. Matl. Res., Submitted (Aug. 7,1991).

M.H. Megherhi, J.P. Dougherty, G.O. Dayton, and R.E. Newnham, "Electrical properties of co-fired high and low dielectric constant multilayer package materials," Proceedings of ISAF'90, Seventh International Symposium on the Applications of Ferroelectrics, IEEE Press (Nov 1991)

D. Roy, S.B. Krupanidhi, J.P. Dougherty, and L.E. Cross, "Process-Property Correlation Studies in Eximer Laser Ablated PZT Thin Films," 25,121-128, Ceramic Transactions, Ferroelectric Films, American Ceramic Society, Columbus, OH, (Dec 1991).

D. Roy, S.B. Krupanidhi, and J.P. Dougherty, “Eximer Laser Ablation of Ferroelectric Pb(Zr,Ti)O_3 Thin Films With Low Pressure DC Glow Discharge” J. Vac. Sci. Technol. A 10(4) 1-5, (1992)

E. Brevel, M. Mulvihill, J.P. Dougherty and R.E. Newnham, "Polyimide-Silica Microcomposite Films," J. Mater. Sci., 27: 3297-3300 (1992).

C.A. Randall, S.F.Wang, D. Laubscher, J.P. Dougherty and W. Huebner, “Structure Property Relationships in Core-Shell $BaTiO_3$-LiF Ceramics” J. Matl. Res. 8:4 , pp. 871-879 (1992)

K. wa Gachigi, U. Kumar,and J.P. Dougherty, “Grain Size Effects in Barium Titanate Ceramics”, Proceedings of the International Symposium for the Applications of Ferroelectrics (ISAF 8) Greenville,South Carolina, IEEE Press (1992)

U. Kumar, S.F. Wang, S. Varanasi, and J.P. Dougherty, “Grain Size Effect on the Dielectric Properties of Strontium Barium Titanate Ceramics”, Proceedings of the International Symposium for the Applications of Ferroelectrics (ISAF 8) Greenville,South Carolina, IEEE Press (1992)

R.R. Bacsa, J.P. Dougherty, and L.J. Pilione, “Low Temperature Synthesis of $BaTiO_3$ Thin Films on Silicon Substrates by Hydrothermal Reaction”, Applied Physics Letters 63 (8), 23 Aug 1993, pp.1053-1055

K. wa Gachigi, U. Kumar,and J.P. Dougherty, “Grain Size Effects in Barium Titanate Ceramics”, Proceedings of the International Symposium for the Applications of Ferroelectrics (ISAF 8) Greenville,South Carolina, IEEE Press (1992)

K. wa Gachigi, U. Kumar, and J.P. Dougherty, “Grain Size Effects in Barium Titanate”, Ferroelectrics , Vol. 143, pp. 229-238 (1993)

W.S. Hackenberger, T.R. Shrout, J.P. Dougherty and R.F. Speyer, "Sintering Phenonena and Microstructural Development in LTCC Multilayer Substrates", Proc. ISHM International Conference, Dallas, Nov. 1993

Girish Harshe, J.P. Dougherty, and R.E. Newnham, "Magnetoelectric Effect in Composite Materials" Proc Conference on Smart Structures & Materials Feb 1-3, 1993 Albuquerque NM, SPIE Vol. 1919 Mathematics in Smart Structures (1993) pp.224-235

H. Fiallo, J.P. Dougherty, S.J. Jang, and R.E. Newnham, "Integrated Metal-Semiconductor-Relaxor Microstrip Lines For Application Up To 1 GHz", Proc. IEEE 2nd Topical Meeting on Electrical Performance of Electronic Packaging, Oct 20-22, 1993, Monterey CA, pp. 103-106

J. P. Dougherty and R. Bacsa, Synthesis of Barium Titanate Thin Films on Titanium, Proc. US: Japan Seminar on Dielectric and Piezoelectrics, Maui, HW, Nov. 1993

Girish Harshe, J.P. Dougherty, and R.E. Newnham, "Theoretical Modelling of Multilayer Magnetoelectric Composites" Intl. J. of Applied Electromagnetics in Materials 4 , 145-159, (1993)

Girish Harshe, J.P. Dougherty, and R.E. Newnham, "Theoretical Modelling of 3-0/0-3 Magnetoelectric Composites" Intl. J. of Applied Electromagnetics in Materials 4 , 161-171, (1993)

J.P. Dougherty and Y. Chen, "Tailoring Materials for Smart Applications", Invited Paper , Proc. 1994 Intl. Conf. on Intelligent Materials, June 5-8, 1994, Williamsburg VA

U. Kumar, S.F. Wang, U. Selvaraj, and J.P. Dougherty, "Densification and Dielectric Properties of Hydrothermal $BaTiO_3$ with Different Sources of Bi_2O_3 ", Ferroelectrics ,154, 283-288, (1994)

M.P. McNeal, T.R. Shrout, and J.P. Dougherty, "Dielectrics For High Temperature Capacitors", Proc. High Temperature Electronics Conference, Charlotte, N.C., June 5-10, 1994

W.S. Hackenberger, T.R. Shrout, J.P. Dougherty and R.F. Speyer, "The Effect of Differential Shrinkage on the Sintering and Microstructural Development of Low-Temperature Co-firable Multilayer Substrates", Proc. SAMPE/ISHM 7th International Electronics Conference, pp.643-650, Parsippany, NJ, June 20-23, 1994

J.P. Dougherty and S.F. Wang, "High Dielctric Constant Thick Film Capacitors Made From Hydrothermal Barium Titanate", Proc. SAMPE/ISHM 7th International Electronics Conference, Parsippany, NJ, June 20-23, 1994

M.P. McNeal, T.R. Shrout, and J.P. Dougherty, "Dielectrics For High Temperature Capacitors", Proc. Proc. High Temperature Electronics Conference, Charlotte, N.C., June 5-10, 1994

H.H. Fiallo, J.P. Dougherty, S.J. Jang, R.E. Newnham and L. Carpenter, "Transmission Properties of Metal-Semiconductor-Relaxor Microstrip Lines" , IEEE Trans. Microwave Theory & Techniques 1176-1182, **vol. 42**, No. 7, July 1994

J.P. Dougherty, M. Megherhi, and H.H. Fiallo, "Integrated Filters and Overvoltage Protection in Multilayer Ceramic Packaging Materials", Proc. Eighth Cimtec World Ceramics Conference, Florence, June 29-July 4, 1994

S.F. Wang, J.P. Dougherty, W. Huebner, & J.G. Pepin, " Silver-Palladium Thick Film Conductors" published as the Feature Article in Journal of the American Ceramic Society, December 1994 , vol 77, No. 12 , pp 3051-72

R.R. Bacsa and J.P. Dougherty , "Hydrothermal synthesis of barium titanate thin film on titanium powder" J.Mater.Sci. Lett. 14, pp.600-602 (1995)

K. Yamakawa, S. Trolier-McKinstry, J.P. Dougherty, and S.B. Krupanidhi, "Reactive Magnetron Co-sputtered Antiferroelectric Lead Zirconate Thin Films", Applied Physics Letters **67** (14), pp 2014-2016, 2 October 1995

Joseph P. Dougherty and Brian J. Roberts, "Dielectric Characterization of Nonlinear Capacitors", Proc. 7th US: Japan Seminar on Dielectric and Piezoelectrics, Tsukuba, Japan, Nov.15-17 1995

R.R. Bacsa, G. Rutsch and J.P. Dougherty, "Electrochemical Synthesis of Barium Titanate Thin Films" , pp. 194-199 , J. Materials Research. **Vol 11**, No. 1, Jan 1996

Joseph P. Dougherty and Brian J. Roberts, "Dielectric Response to Pulse Drive of MLCs", Proc. Capacitor and Resistor Technology Symposium, March 11-14, 1996, New Orleans, LA

K. Yamakawa, S. Trolier-McKinstry, K.wa Gachigi, and J.P. Dougherty, "Phase Transitions of Antiferroelectric Lead Zirconate Thin Films in High Field", Ferroelectrics Lett., **20** (5/6), (1996)

K. Yamakawa, S. Trolier-McKinstry, and J. P. Dougherty , "Composition Control of Lead or Bismuth Based Ferroelectric Thin Films Prepared by the Sputtering Method", Materials Research Society Symposium Proc. Vol 403 (1996) 591-596

D.R. Sample, P.W. Brown, and, J.P. Dougherty, "The Microstructural Evolution of Copper Thick Films Observed by Environmental Scanning Microscopy", Accepted for Publication (1996) , J. American Ceramic Society

Francis J. Toal, Thomas R. Shrout, Paul J. Moses, Joseph P. Dougherty and Clive A. Randall , "Processing and Electrical Characterization of a Varistor/Capacitor Co-Fired Multilayer Device", Proc. Capacitor and Resistor Technology Symposium, March 11-14, 1996, New Orleans, LA

J.P. Witham, P. Ravidranathan, R.E. Newnham, and J.P. Dougherty, "Hydrothermal Preparation and Fabrication of Lead Zirconate Titanate (PZT) Ceramics , Accepted for Publication, J American Ceramic Society

K. Yamakawa, S. Trolier-McKinstry, and J. P. Dougherty , "Preparation of Lead Zirconate Titanate Thin Films by Reactive Magnetron Co-Sputtering", Materials Letters **28** (1996) 317-322

K. Yamakawa, S. Trolier-McKinstry, and J. P. Dougherty , "Electrical Properties and Phase Transformations in Antiferrolectric Lead Zirconate Titanate Thin Films" Proc. ISAF 96, August 1996

K. Yamakawa, S. Trolier-McKinstry, K. wa Gachigi, and J. P. Dougherty , "Structure and Electrical Properties of Antiferroelectric Lead Zirconate Titanate Thin Films Prepared by Reactive Magnetron Co-Sputtering", J. Mat. Sc. (1997)

K. Yamakawa, S. Trolier-McKinstry, and J. P. Dougherty , "Control of Orientation and Texture for Lead Zirconate Titanate Thin Films Prepared by by RF Magnetron Sputtering" Thin Solid Films (1997)

Raghu Natarajan and Joseph P. Dougherty, "Influence of Lithium Addition on the Sintering and Dielectric Properties of PNN-PMW-PT Relaxor Ferroelectrics" Proc. MRS, Fall 1996

Raghu Natarajan and Joseph P. Dougherty, "Material Compatibility and Dielectric Properties of Co-Fired High and Low Dielectric Constant Ceramic Packages" Proc. Electronic Components & Technology Conference, IEEE Press, May 18-21, 1997

J. Rector, J.P. Dougherty, V. Brown, J. Galvani, J. Prymak, "Technology Roadmap for Integrated Passive Components", Proc. Capacitor and Resistor Technology Symposium, Jupiter Florida, March 25-27, 1997

J.P. Dougherty, C. MacIntosh, T. Lett, and S. Perini,, "High Field Properties of Commercial MLCs", Proc. Capacitor and Resistor Technology Symposium, Jupiter Florida, March 25-27, 1997

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